What is claimed is:

1. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation to a subject in need thereof, wherein said cell cycle checkpoint activation modulator:

a) does not damage DNA and does not stabilize microtubules; and

b) is administered in a dosage effective manner to treat said cancer in said subject, wherein said cell cycle checkpoint activation modulator is not β-lapachone.

2. The method of claim 1, wherein said dosage is not cytotoxic to non-cancerous cells.

3. The method of claim 1, wherein said dosage does not affect non-cancerous cell viability.

4. The method of claim 1, wherein said cell cycle checkpoint activation modulator inhibits cellular proliferation.

5. The method of claim 1, wherein said cell cycle checkpoint activation modulator induces apoptosis.

6. The method of claim 1, wherein said cell cycle checkpoint activation modulator is a G1 and/or S phase checkpoint modulator.

7. The method of claim 1, wherein said cell cycle checkpoint activation modulator is not a peptide or protein.

8. The method of claim 1, wherein said cell cycle checkpoint activation modulator has a molecular weight of less than 5 kD.

9. The method of claim 1, wherein said cell cycle checkpoint activation modulator is selected from the group consisting of 3,4-dihydro-2,2-dimethyl-3-(3-methyl-2-butenyl)-2H-naphtho[1,2-b]pyran-5,6-dione, 3,4-dihydro-2,2-dimethyl-2H-naphtho[1,2-b]thiopyran-5,6-dione and 3,4-dihydro-4,4-dimethyl-2H-naphtho[1,2-b]thiopyran-5,6-dione.

10. The method of claim 1, wherein said subject is human.

11. The method of claim 1, wherein said cell cycle checkpoint activation modulator is administered parenterally.

12. The method of claim 1, wherein said cell cycle checkpoint activation modulator is administered intravenously.

13. The method of claim 1, wherein said cell cycle checkpoint activation modulator is administered orally.

14. The method of claim 1, wherein said cell cycle checkpoint activation modulator is administered topically.

15. The method of claim 1, wherein said cell cycle checkpoint activation modulator is administered in combination with a chemotherapeutic agent.

16. The method of claim 15, wherein said chemotherapeutic agent is selected from the group consisting of microtubule targeting drugs, topoisomerase poison drugs and cytidine analogue drugs.

17. The method of claim 15, wherein said chemotherapeutic agent is selected from the group consisting of Taxol® (paclitaxel), lovastatin, minosine, tamoxifen, gemcitabine, araC, 5-fluorouracil (5-FU), methotrexate (MTX), docetaxel, vincristin, vinblastin, nocodazole, teniposide, etoposide, adriamycin, epothilone, navelbine, camptothecin, daunonibicin, dactinomycin, mitoxantrone, amsacrine, epirubicin and idarubicin.

18. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation to a subject in need thereof, wherein said cell cycle checkpoint activation modulator:

a) does not damage DNA and does not stabilize microtubules;

b) is administered in a dosage effective manner to treat said cancer in said subject; and

c) elevates the level of a member of the E2F family of transcription factors, selected from the group consisting of E2F-1, E2F-2 and E2F-3,

wherein said cell cycle checkpoint activation modulator is not β-lapachone.

19. The method of claim 18, wherein said dosage is not cytotoxic to non-cancerous cells.

20. The method of claim 18, wherein said dosage does not affect non-cancerous cell viability.

21. The method of claim 18, wherein said cell cycle checkpoint activation modulator inhibits cellular proliferation.

22. The method of claim 18, wherein said cell cycle checkpoint activation modulator induces apoptosis.

23. The method of claim 18, wherein said cell cycle checkpoint activation modulator is a G1 and/or S phase checkpoint modulator.

24. The method of claim 18, wherein said cell cycle checkpoint activation modulator is not a peptide or protein.

25. The method of claim 18, wherein said cell cycle checkpoint activation modulator has a molecular weight of less than 5 kD.

26. The method of claim 18, wherein said cell cycle checkpoint activation modulator is selected from the group consisting of consisting of 3,4-dihydro-2,2-dimethyl-3-(3-methyl-2-butenyl)-2H-naphtho[1,2-b]pyran-5,6-dione, 3,4-dihydro-2,2-dimethyl-2H-naphtho[1,2-b]thiopyran-5,6-dione and 3,4-dihydro-4,4-dimethyl-2H-naphtho[1,2-b]thiopyran-5,6-dione.

27. The method of claim 18, wherein said subject is human.

28. The method of claim 18, wherein said cell cycle checkpoint activation modulator is administered parenterally.

29. The method of claim 18, wherein said cell cycle checkpoint activation modulator is administered intravenously.

30. The method of claim 18, wherein said cell cycle checkpoint activation modulator is administered orally.

31. The method of claim 18, wherein said cell cycle checkpoint activation modulator is administered topically.

32. The method of claim 18, wherein said cell cycle checkpoint activation modulator is administered in combination with a chemotherapeutic agent.

33. The method of claim 32, wherein said chemotherapeutic agent is selected from the group consisting of microtubule targeting drugs, topoisomerase poison drugs and cytidine analogue drugs.

34. The method of claim 32, wherein said chemotherapeutic agent is selected from the group consisting of Taxol® (paclitaxel), lovastatin, minosine, tamoxifen, gemcitabine, araC, 5-fluorouracil (5-FU), methotrexate (MTX), docetaxel, vincristin, vinblastin, nocodazole, teniposide, etoposide, adriamycin, epothilone, navelbine, camptothecin, daunonibicin, dactinomycin, mitoxantrone, amsacrine, epirubicin and idarubicin.

35. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation to a subject in need thereof, wherein said cell cycle checkpoint activation modulator:

a) does not damage DNA and does not stabilize microtubules;

b) is administered in a dosage effective manner to treat said cancer in said subject; and

c) elevates the level of the transcription factor E2F-1,

wherein said cell cycle checkpoint activation modulator is not β-lapachone.

36. The method of claim 35, wherein said dosage is not cytotoxic to non-cancerous cells.

37. The method of claim 35, wherein said dosage does not affect non-cancerous cell viability.

38. The method of claim 35, wherein said cell cycle checkpoint activation modulator inhibits cellular proliferation.

39. The method of claim 35, wherein said cell cycle checkpoint activation modulator induces apoptosis.

40. The method of claim 35, wherein said cell cycle checkpoint activation modulator is a G1 and/or S phase checkpoint modulator.

41. The method of claim 35, wherein said cell cycle checkpoint activation modulator is not a peptide or protein.

42. The method of claim 35, wherein said cell cycle checkpoint activation modulator has a molecular weight of less than 5 kD.

43. The method of claim 35, wherein said cell cycle checkpoint activation modulator is selected from the group consisting of consisting of 3,4-dihydro-2,2-dimethyl-3-(3-methyl-2-butenyl)-2H-naphtho[1,2-b]pyran-5,6-dione, 3,4-dihydro-2,2-dimethyl-2H-naphtho[1,2-b]thiopyran-5,6-dione and 3,4-dihydro-4,4-dimethyl-2H-naphtho[1,2-b]thiopyran-5,6-dione.

44. The method of claim 35, wherein said subject is human.

45. The method of claim 35, wherein said cell cycle checkpoint activation modulator is administered parenterally.

46. The method of claim 35, wherein said cell cycle checkpoint activation modulator is administered intravenously.

47. The method of claim 35, wherein said cell cycle checkpoint activation modulator is administered orally.

48. The method of claim 35, wherein said cell cycle checkpoint activation modulator is administered topically.

49. The method of claim 35, wherein said cell cycle checkpoint activation modulator is administered in combination with a chemotherapeutic agent.

50. The method of claim 49, wherein said chemotherapeutic agent is selected from the group consisting of microtubule targeting drugs, topoisomerase poison drugs and cytidine analogue drugs.

51. The method of claim 49, wherein said chemotherapeutic agent is selected from the group consisting of Taxol® (paclitaxel), lovastatin, minosine, tamoxifen, gemcitabine, araC, 5-fluorouracil (5-FU), methotrexate (MTX), docetaxel, vincristin, vinblastin, nocodazole,

teniposide, etoposide, adriamycin, epothilone, navelbine, camptothecin, daunonibicin, dactinomycin, mitoxantrone, amsacrine, epirubicin and idarubicin.

52. A method for treating or preventing an apoptosis-associated disorder in a subject, comprising administering a modulator of cell cycle checkpoint activation to subject in need thereof, wherein said cell cycle checkpoint activation modulator:

a) does not damage DNA and does not stabilize microtubules; and

b) is administered in a therapeutically effective amount to induce apoptosis in said subject, wherein said cell cycle checkpoint activation modulator is not β-lapachone.

53. A method of inducing apoptosis in a subject, comprising administering a modulator of cell cycle checkpoint activation to subject in need thereof, wherein said cell cycle checkpoint activation modulator:

a) does not damage DNA and does not stabilize microtubules; and

b) is administered in a therapeutically effective amount to induce apoptosis in said subject, wherein said cell cycle checkpoint activation modulator is not β-lapachone.

54. A method of inducing apoptosis in a cell, comprising contacting said cell with a modulator of cell cycle checkpoint activation, wherein said cell cycle checkpoint activation modulator:

a) does not damage DNA and does not stabilize microtubules; and

b) is in a dosage effective to induce apoptosis in said cell,

wherein said cell cycle checkpoint activation modulator is not β-lapachone.

55. A method for screening for a cell cycle checkpoint activation modulator, comprising

a) contacting a cancer cell with a candidate compound, and

b) measuring the degree (or extent) of elevation of a member of the E2F family of transcription factors, selected from the group consisting of E2F-1, E2F-2 and E2F-3, if present, wherein an increase in an E2F family member in the presence of said compound, as compared to the absence of the compound, indicates that the compound is an inducer of apoptosis.

56. A cell cycle checkpoint activation modulator identified by the method of claim 55.

57. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation identified by the method of claim 55 to a subject in need thereof, wherein said cell cycle checkpoint activation modulator treats said cancer.

58. A method for screening for a cell cycle checkpoint activation modulator, comprising

a) contacting a cancer cell with a candidate compound, and

b) measuring the degree (or extent) of elevation of the transcription factor E2F-1, if present, wherein an increase in E2F-1 in the presence of said compound, as compared to the absence of the compound, indicates that the compound is an inducer of apoptosis

59. A cell cycle checkpoint activation modulator identified by the method of claim 58.

60. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation identified by the method of claim 58 to a subject in need thereof, wherein said cell cycle checkpoint activation modulator treats said cancer.

61. A method for screening for a cell cycle checkpoint activation modulator, comprising

a) contacting a cell with a candidate compound, and

b) measuring the degree (or extent) of apoptosis, if present, wherein an increase in apoptosis in the presence of said compound, as compared to the absence of the compound, indicates that the compound is an inducer of apoptosis.

62. A cell cycle checkpoint activation modulator identified by the method of claim 61.

63. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation identified by the method of claim 61 to a subject in need thereof, wherein said cell cycle checkpoint activation modulator treats said cancer.

64. A method for screening for a compound effective for treating cancer, comprising

a) contacting a cancer cell with a candidate compound, and

b) measuring the degree (or extent) of elevation of a member of the E2F family of transcription factors, selected from the group consisting of E2F-1, E2F-2 and E2F-3, if

present, wherein an increase in an E2F family member in the presence of said compound, as compared to the absence of the compound, indicates that the compound is an inducer of apoptosis.

65. A compound effective for treating cancer identified by the method of claim 64.

66. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation identified by the method of claim 64 to a subject in need thereof, wherein said cell cycle checkpoint activation modulator treats said cancer.

67. A method for screening for compound effective for treating cancer, comprising

a) contacting a cancer cell with a candidate compound, and

b) measuring the degree (or extent) of elevation of the transcription factor E2F-1, if present, wherein an increase in E2F-1 in the presence of said compound, as compared to the absence of the compound, indicates that the compound is an inducer of apoptosis

68. A compound effective for treating cancer identified by the method of claim 67.

69. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation identified by the method of claim 67 to a subject in need thereof, wherein said cell cycle checkpoint activation modulator treats said cancer.

70. A method for screening for a compound effective for treating cancer, comprising

c) contacting a cell with a candidate compound, and

d) measuring the degree (or extent) of apoptosis, if present, wherein an increase in apoptosis in the presence of said compound, as compared to the absence of the compound, indicates that the compound is an inducer of apoptosis.

71. A compound effective for treating cancer identified by the method of claim 70.

72. A method of treating cancer, comprising administering a modulator of cell cycle checkpoint activation identified by the method of claim 70 to a subject in need thereof, wherein said cell cycle checkpoint activation modulator treats said cancer.